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BEEF
TIME
WITH THE
MIDSHIPMEN



ORVILLE L. FREEMAN
Secretary of Agriculture

S. R. SMITH, Administrator
Agricultural Marketing Service

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Cover Page

Beef time at the U. S. Naval Academy in Annapolis, Maryland, is a favorite among Midshipmen, whether it be breakfast steak, hamburgers for lunch, or pot roast of beef as shown on our cover page.

In one year, the 4,000 young men who attend the academy will eat 544,000 pounds of fresh beef . . . almost a ton of beef is packed away each time the brigade sits down to eat.

Editor, MILTON HOFFMAN
Assistant Editor, JAMES A. HORTON

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More Versatile Vans Can Cut Shipping Costs for Farm Products

BEAUTY, books — and trailer vans — can be deceiving from outward appearances. Trailer vans belong in this category because, under the "skin," major changes are taking place that will make it possible for the same van to carry conventional packaged freight, bulk cargo such as grain and soybeans, and even milk and possibly other liquids. Refrigerated and nonrefrigerated freight may also be carried in the same vans over the highway, on rails, by air, or by ship.

Transportation researchers of USDA's Agricultural Research Service and the Oregon Agricultural Experiment Station are studying several ways of developing multipurpose vehicles. The projects are headed by Philip L. Breakiron, of the ARS Transportation and Facilities Research Division, and by Forrest S. Baker, of the Oregon Agricultural Experiment Station. This research seeks to lower the cost of transporting many farm products by increasing the utilization rate of vans, thereby lowering the operator's cost per mile.

Conventional vans frequently make empty return trips because they are equipped to carry only one type of cargo.

Researchers are studying a number of conversion systems to make conventional vans practical for use with a variety of agricultural products. In testing one system to convert conventional closed vans for shipment of bulk products, for example, they made removable panels for installation along interior walls to provide sloping and self-clearing surfaces, and installed hatches in the roof for rapid loading and unloading. In some cases, hatches were also installed in the floors to permit rapid unloading. Other vans were equipped with tunnels for removable conveyors in the floor of the van for use in unloading operations.

The panels and conveyors are installed in the vans after delivery of

conventional freight in an agricultural region. The bulk product then is quickly loaded and delivered on an elevator, packaging, or processing plant along the van's return route. At this point, the panels and conveyors are removed from the vans. Space and weight capacity needed for conventional freight on subsequent trips is therefore not sacrificed by use of conversion equipment.

Panels and frames from several vans could be loaded in a single van and returned to the agricultural region for re-use in other vans, in an endless cycle.

Another conversion system is applied to fluid cargo. Collapsible plastic lined tanks would be placed on the floor of a conventional closed van for transport of the milk, and removed at the destination and re-used in the same kind of cycle as for bulk products.

Researchers are now building vans which could be adapted for shipment of flour and other powdered products in bulk. With the converter in place, the flour would then be blown through a hatch by use of pneumatic loading. At destination, it would be unloaded by another pneumatic device.

Such innovations for conventional trailers could reduce the need for costly transport equipment used only for a few products or on a seasonal basis. Although the equipment to be tested by the researchers will be custom-built, similar paneling and conveyors for grain shipments could be built by the operators using readily available supplies, or obtained at reasonable cost by adapting commercially available equipment. The cost of such equipment could be recovered in less than a year by most operators.

Another study promises similar potential for reduced shipping costs and greater versatility for refrigerated vans. Researchers have developed a design concept for refrigerated vans light

enough for economical transportation of nonrefrigerated freight.

The weight problem that makes heavy conventional refrigerated vans uneconomical for use with nonrefrigerated freight would be overcome to a great extent by placing the refrigeration plant on a detachable wheeled-chassis. The van unit would be removed from the chassis and shipped piggyback on railcars, aboard ship, or possibly on airplanes. Less insulation and plastic or lightweight metal sides would also contribute to reduction in weight of the vans.

Another distinctive feature of the new van concept is its air circulation and refrigeration system. Removable partitions would make it possible to maintain separate temperatures in each 10-foot section of the van. A temperature range of -10 to 65°F. could be maintained in any section when the outside temperature was within a range of -10 to 100°F.

Air would circulate laterally across cooling coils in the ceiling and down through false walls located on each side. For perishable loads, air then moves upward through the floor of the load and returns to the ceiling to again cross the coils and follow the same cycle.

For frozen loads, the return air openings in the ceiling would be closed and refrigerated air would circulate laterally down one side wall, under the floor, upward through the other false wall, and back across the coils in the ceiling.

Heated air could also be circulated through the van, or vents could be opened for circulation of outside air.

Advances in engineering technology and new materials make such innovations possible. Reports will be issued as researchers test conversion systems that offer the greatest promise for more efficient transportation of agricultural products.

A Portable Sampler for Airborne Microorganisms

By Anthony W. Kotula, Jack A. Kinner, and J. Donald Rowan

FOOD processing plants and grain storage facilities can now be rapidly tested for airborne microorganisms in any work area by using a method tested by marketing researchers in the U. S. Department of Agriculture. The researchers converted air samplers into portable units so they could be used in work areas where electrical outlets were inaccessible or where the risk of shock in wet areas made use of conventional samplers hazardous.

A conventional sampler was adapted by marketing researchers in USDA's Agricultural Research Service to operate on a 12-volt automobile battery. A transistorized converter was used to change the battery's direct current into alternating current required by the sampler.

Successful tests with the portable sampler were made in Delaware and Maryland poultry plants. Little, if any data had been reported on airborne microorganisms in poultry plants before these tests were made.

The sampler with its battery and transformer can be rolled to different work locations on a small cart. When the current is turned on, a measured volume of air is drawn into the sampler by a small vacuum pump. Microorganisms are deposited on agar plates as in conventional samplers.

Unlike some present testing methods, in which time must be given for microorganisms to settle after equipment is in place, the method tested by the researchers provides immediate samples. Colony counts are made after a period of incubation as in standard testing procedures.

Tests in poultry plants confirmed the need — sometimes questioned — for carrying out different processing operations in separate rooms. Even though sanitary conditions were maintained throughout the plant, airborne bacteria were more prevalent in some locations.

Bacterial counts were highest in the dressing room because defeathering operations stirred up bacteria-laden dust. Bacterial counts also increased, as expected, during the day.

Without separate rooms for different processing operations, bacterial counts would have been more uniform throughout the plant — a condition that could have caused contamination of the fresh poultry and shortened its shelf life in stores.

Poultry processing plants built in the future could improve sanitation if floor plans and airflow were coordinated to force the air from areas of low bacterial contamination to those

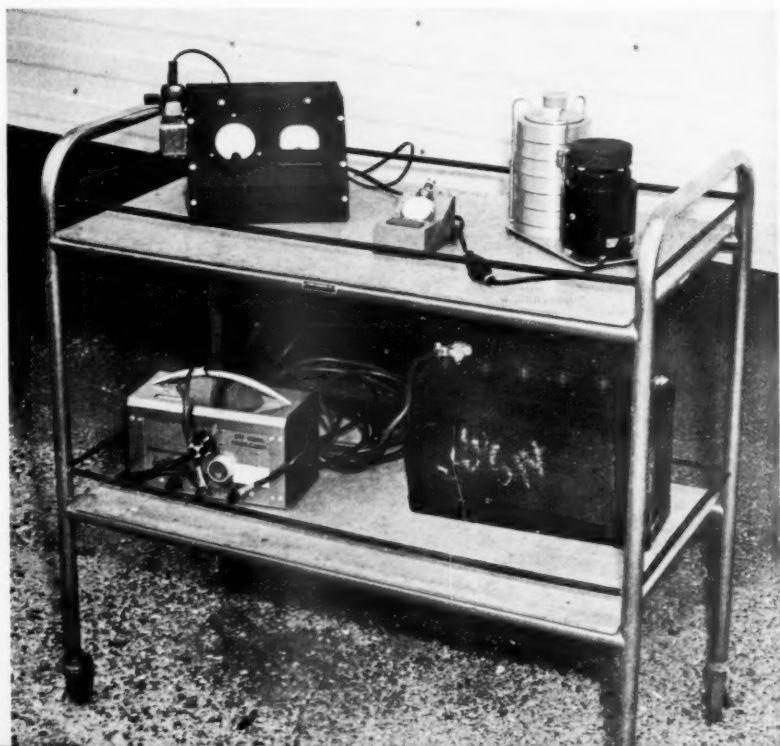
of greater contamination. Bacteria could thereby be reduced in packing and storage rooms.

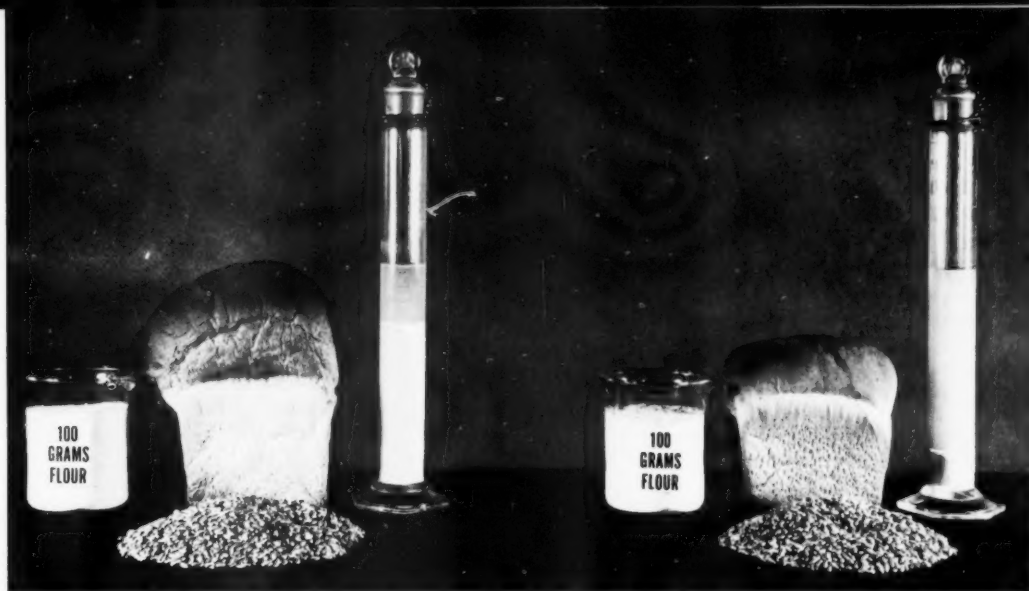
Tests are now being made with the portable samplers at USDA's experimental bin site at Watseka, Ill. Usefulness of the portable sampler under commercial conditions at grain storage facilities will be determined in the tests. The portable sampler's potential for further use in research leading to greater protection of stored grain from microorganisms will also be determined.

Technical details of the pioneer USDA tests are given in *Applied Microbiology*, May 1964.

(The authors are members of the Market Quality Research Division, Agricultural Research Service, USDA.)

Marketing researchers converted this conventional electrical air sampler into a portable unit by equipping it with an automobile battery and a transistorized converter, shown on bottom shelf of cart. Meters at left on top shelf measure flow of current from battery to vacuum pump at right. Air is drawn through collecting device for bacteria next to pump.





These two cylinders show how closely the amount of sediment reflects the bread-baking qualities of the wheat flour samples. The higher the sediment in the cylinder, which holds a mixture of carefully measured water, lactic acid, isopropyl alcohol, and wheat flour, the greater the volume of the loaf of bread.

Evaluating Bread-Baking Quality of Wheat

By Clyde W. Jackson

THE wheat sedimentation test is finding increasing use in evaluating bread-baking quality of wheat in several countries.

Chief advantage of the test over similar tests is that it's simple, rapid, requires little equipment, and reflects the *quantity* and *quality* of the protein in the wheat. These are the most important wheat characteristics influencing bread-baking quality.

In the U. S., the test is offered to grain dealers, millers, and others on a voluntary, fee basis by State and commercial grain inspection agencies operating under supervision of the USDA's Agriculture Marketing Service.

During the last fiscal year, nearly 180,000 sedimentation certificates were issued by inspection agencies in wheat areas across the country.

An important use of the test which has gained attention during the last two years is in the USDA price support program. The test, along with another analysis known as the protein test, is used for determining loan premiums paid wheat growers — offering a price premium to growers who produce wheat with better than average bread-baking potential.

Following his visit to many mills, grain research laboratories, and wheat breeding stations in several European countries during May and June, an AMS marketing specialist reported that the test is being used regularly and profitably by many of the largest mills in Europe and by most of the wheat breeders visited. Among the mills and breeding stations that have made a careful investigation of the test, the opinion was general that the sedimentation test provides the best available simple, practical procedure for estimating the bread-baking strength of wheat.

A quality survey of the 1963 U. S. hard wheat crops — made this year by a midwestern cereal laboratory in co-operation with a wheat market development organization and the Agricultural Marketing Service — included an evaluation of the sedimentation test, compared with other tests to estimate bread-baking quality of wheat.

In the survey, 2,652 samples of hard red winter wheat and 950 samples of hard red spring wheat were tested. The winter wheat samples were from 23 production areas in Texas, Oklahoma, Kansas, Colorado, Nebraska, Wyoming, South Dakota, Montana, Missouri, and Illinois, and the spring wheat samples were from 10 areas in South Dakota,

North Dakota, Minnesota, and Montana.

When analyzed, the results showed that in most areas the sedimentation value provided a better measure of bread-baking quality than did the protein content or the farinograph (a mechanical device commonly used to evaluate bread-baking quality by measuring various physical properties of bread dough). Similar results were shown in a survey of the 1962 crop (reported in the March 1963 issue of *Agricultural Marketing*).

In these surveys the criterion of bread-baking quality used to compare the results of the sedimentation and other tests was a "flour evaluation score," which is a composite evaluation based on the more important physical characteristics of the bread (including loaf volume) as well as bread-dough properties.

While better tests may be developed in the future, as long as the wheat sedimentation test remains the most reliable, single, simple test for estimating bread-baking quality of wheat, it should continue to gain wider acceptance and use.

(The author is Deputy Director of the Grain Division, Agricultural Market Service, USDA.)

Bargaining Power Through Organization

By George H. Goldsborough

THE need for organization for farmer bargaining power has never been more vital than it is today. When we speak of organization for marketing, we have only to look at retail food marketing to see a masterful job. Here we have organization scaled to meet the mass merchandising dictated by our ability to produce abundantly under an increasingly urban way of life.

It is precisely the bigness on the buying side, together with other changes in the marketing system, that makes it so necessary for farmers to organize their selling efforts. Buyers are increasingly demanding large uniform lots of specified quality and some assurance of regular delivery. To meet these demands effectively, producer sales organizations must have volume and quality controls.

Through cooperatives, farmers have been able to bargain rather effectively in the marketing of a number of products. Today about 25 percent of farm commodities are sold through farm cooperatives.

In addition, improvements in orderly marketing are being achieved through marketing agreements and orders (which began in the 1930's) under Federal and State legislation.

Commodity organizations, too, which do not take title to products, perform various services, strengthening the hands of producer members in serving the needs of today's large merchandisers. For example:

Celery and sweet corn producers in Florida, with the aid of the Florida Department of Agriculture, have formed commodity groups to gain a stronger voice in the marketplace. They have (1) established an information service to give growers valuable data on supplies, quality and package to be needed; (2) regulated the flow of their product to market to meet demand situations; and (3) inaugurated promotion and merchandising activities. More work along these lines is needed and many farmers are finding this out.

Feeder pig and dairy heifer producers in Virginia have organized sales cooperatives to present graded, inoculated, similar-weight animals on a lot basis to give buyers the kind of animals they want, and to get a better return from their investment.

Wisconsin dairy farmers are merging small cooperatives in an effort to lower overhead costs and obtain better control over the marketing of their products. Marketing specialists with the Wisconsin Department of Agriculture are working with them on cooperative law, cost analysis studies and interpretation of Federal and State marketing orders.

Fruit and vegetable producers in North Carolina have organized commodity groups to improve the marketing structure by planned production, volume sales, reduction of normal marketing risk, and change to sales and marketing through centralized marketing facilities and points.

Commodity marketing advisory groups are also being started in Pennsylvania, to establish a better channel of communication between basic agricultural groups, producers, food distributors and consumers and to bring about a more organized system of marketing agricultural products to insure maximum returns to producers and to increase consumer satisfaction.

These are only a few of the marketing service programs being conducted by State departments of agriculture in the Federal-State Matching Fund Program, administered by the Agricultural Marketing Service of the U. S. Department of Agriculture.

This activity is titled "Improving the Organizational Structure of the Marketing System." The activity is new, but the idea is not wholly new because some projects which emphasize an organized approach have been conducted under the Matching Fund Program in the past under other titles.

The newly authorized area of work under the program — through which Federal funds are matched with State funds — opens up a new field of self-improvement at the local level in agricultural marketing.

TRADITIONALLY, marketing improvement work under M.F.P. has been under four categories of authorized activity: (1) maintaining product quality, (2) expanding market outlets, (3) reducing costs through improving efficiency, and (4) providing new basic data and market information.

The new area, "Improving the Organizational Structure of the Market-

ing System," involves a broad concept of marketing improvement work which might embrace any of the four traditional categories. It goes beyond the immediate needs of marketing improvement and looks to the future.

Projects under this activity are concerned with helping producer groups and local marketing agencies organize selling and bargaining efforts to deal more effectively with the ever-increasing buyer power in fewer and fewer hands — and to meet the needs of these buyers in a more orderly manner.

Technical assistance and counsel will be provided by State departments of agriculture to groups desiring to achieve these objectives through any of a number of available methods — such as cooperative action, industry-wide programs such as marketing orders under Federal or State authority, or affiliation with private firms under contract.

Also, where conventional forms of coordinating efforts of producers do not offer solutions, technical assistance will be provided in experimenting with alternative ways of attaining such coordination. For example, an efficient scale of operation may require more capital than can be raised by farmers alone. An approach to this problem is exemplified by one State where consideration is being given to the possibility of combining the resources of local businessmen and ranchers and operating a custom cattle feedlot. This provides a means for member ranchers to finish cattle on local feeds, increases marketing opportunities, provides an outlet for local investors, and serves as a stimulus for community growth.

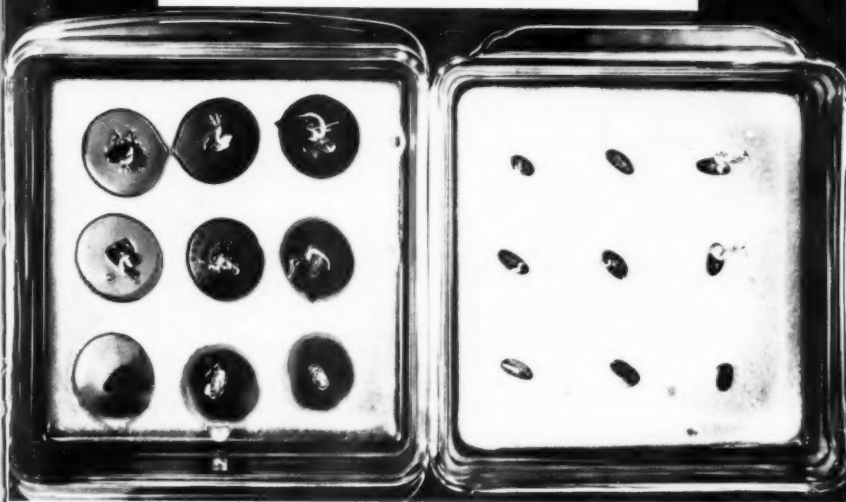
In another State, potato producers are considering means whereby they can join with shippers and local business interests in building and operating modern centralized packaging, storing and marketing facilities.

These programs, though supported and guided by USDA, are designed to allow State departments of agriculture, with local producer and marketing groups, to strike at the heart of one of the problems facing agriculture — the need for improvement in the structure of the marketing system itself.

(The author is Director of the Matching Fund Program, Agricultural Marketing Service, USDA.)

Fungicides Give Seed Protection
Against Infection During
Germination

Treated Seeds Untreated Seeds
in a Fungus Culture



In bio-assay test to determine whether seed is treated, a clear area or "halo" containing no fungus growth remains around treated seed after 24 to 48 hours, as in container on left.

Testing Treated Seeds

By Bernard M. Leese

A "bio-assay" test is now being used routinely by seed specialists of the U. S. Department of Agriculture to determine whether seed on the market has been treated with a fungicide.

The test makes use of a living organism — bacteria or fungus — to determine whether seed is treated with toxic substances. Results of the test provide seed officials of USDA's Agricultural Marketing Service with the information they need to enforce labeling requirements of the Federal Seed Act which apply to treated seed.

These requirements were added to the Act just a few years ago, since much of the agricultural, vegetable, and lawn seed now sold has been treated to protect it from fungi injury when planted. Such protection enables seed to grow into healthier seedlings — with the resultant production of better crops, lawns, and gardens.

When treated seed is shipped or sold between States, specific labeling is re-

quired under the Act to show that it has been treated and to indicate the substances used for treatment.

In making the bio-assay test as a check on labeling, the seed analyst places the seeds in question on a gelatin surface which he has inoculated with spores (reproductive organs) of a fungus or bacteria sensitive to fungicides. The spores multiply rapidly, producing a moldy appearance. While this growth is occurring, the fungicide on treated seeds begins to seep through the gelatin medium. This gives rise to a clear zone or "halo" around each seed, where growth of the test fungus or bacteria is inhibited.

Seeds treated with different amounts of the various kinds of fungicides produce "halos" of different sizes, giving evidence of the amount of a particular fungicide on individual seeds.

Several methods have been developed for simplifying the test, allowing it to become routine in Federal, State, or commercial seed testing laboratories, in similar fashion as seeds are tested

for germination percentages.

One such simplified technique developed by AMS seed specialists employs blotters saturated with a mixture of fungus spores, along with nutrients which enable the spores to grow and multiply. This technique allows the test to be made rapidly — within 48 hours — and on large numbers of seed samples.

If the bio-assay test reveals that the seed in question has been treated and it has not been labeled to indicate that it has been treated, then the shipment is in violation of the Federal Seed Act. It's also a violation if nontreated seed is labeled as having been treated.

Here are the Act's requirements for labeling treated seed:

Labeling must show: (1) *that the seed is treated*, (2) *the chemical name of the substance used for treating it*, (3) *an appropriate caution statement*.

The caution statement for mercurial and similarly toxic substances must include the word "POISON" in red letters and be accompanied by the symbol of a skull and crossbones. Seed treated with other substances in amounts harmful to humans or other vertebrate animals must bear a caution statement such as "Do not use for food, feed, or oil purposes." This requirement does not apply to seed in containers of less than four ounces.

When planted seed is sprouting, the seedling may be surrounded by a webbing of fungi or molds which are present in the soil. A fungus which attacks the seedling may cause it to decay in the ground or cause the seedling to come up as a weakened or diseased plant — unless the seed has been treated to inhibit or kill the fungus growth.

So, fungicide treatment of seeds is a valuable asset in the development of healthy plants. But the amounts of fungicide that each seed should receive is quite critical. Over-treatment can harm seedling growth and under-treatment may not protect the seedling.

Farmers and home gardeners who buy seed should carefully read the label to note whether it's treated, and, if so, pay close heed to the caution statement.

Bio-assay testing is now enabling the seed buyer to place much greater reliance on this labeling information.

(The author is Head of the Testing Section, Seed Branch, Grain Division, Agricultural Marketing Service, USDA.)

Stimulating sales at home and developing new markets abroad

USDA Help to the Bee

WHEN the total resources of the U. S. Department of Agriculture are joined with those of industry to attack a marketing problem, the effects are felt literally around the world.

At least, that's the result of some nine months of massive, multiple Government-industry actions to maintain a vigorous beef cattle industry in the United States. Not only are Americans eating more beef than ever before, but many Europeans are getting their first taste — and liking it — of this high-protein product that holds such a key place in our national agricultural economy.

The problem is far from simple in its causes, but it can be stated simply: the supply of beef overwhelmed the demand. One livestock man put it this way: "We have just done too good a job of production without equal emphasis on marketing."

The roots of the problem go back a decade, during which both the ability and desires of consumers to buy beef grew steadily and domestic markets readily absorbed an annual average increase of 3 to 4 percent in supplies of beef. But when in 1963 the per capita supply rose about 8 percent, cattle prices fell sharply. Producers began to feel the pinch. They asked USDA to help promote beef consumption.

This year, total beef production has been running 11 to 13 percent above 1963. Accordingly, in the first weeks of 1964, USDA and industry not only redoubled promotional efforts to move more beef into domestic markets through regular trade channels, but initiated purchase programs of frozen and canned beef for schools and needy families, moved swiftly to develop new

markets abroad, brought about voluntary agreements with major beef-exporting countries to reduce shipments to the U. S., and proposed revision in quality grade standards to encourage marketing of lighter weights of cattle.

Because of its responsibilities in the marketing and distribution of farm products, USDA's Agricultural Marketing Service played a major role in the domestic programs developed to assist the beef cattle industry.

In late February, purchases of Choice grade frozen beef for schools and institutions were initiated, along with the buying of canned domestic beef for distribution to needy families. As of September 24, USDA had purchased a total of 243,877,710 pounds at a cost of \$137,800,000.

In mid-March, in cooperation with the National Live Stock and Meat Board, one of the most intensive promotional and merchandising drives ever devised for a single agricultural commodity was launched. In late May, following reports from retail outlets that beef sales were ranging 8 to 25 percent above the high levels of a year earlier, the industry-government drive was continued and intensified for the summer months.

Operating within the framework of the Plentiful Foods Program, AMS worked vigorously with the food distributive trades, the food service industry, and allied groups to obtain maximum exposure for beef. At the same time, educational and informational materials for press, radio, and television helped to tell consumers about the abundance, goodness, and nutritive value of beef.

In a series of 12 coast-to-coast trade meetings arranged by AMS at key

marketing centers during July, merchandising specialists of the National Live Stock and Meat Board demonstrated latest meat-cutting techniques and new merchandising ideas for stimulating increased consumer interest in beef.

The Plentiful Foods drive to increase consumption of beef will continue as long as necessary. That's the pledge of Secretary of Agriculture Orville L. Freeman.

The record total beef production stems not only from the vast expansion in cattle numbers, but also from the fact that the marketing weights of cattle have been on the increase. In 1963, the weight per head of cattle commercially slaughtered reached an all-time high of 1,024 pounds.

Accordingly, the National Advisory Committee on Cattle, established by the Department in March 1964 to represent producer, trade, and consumer interests, recommended a revision of U. S. quality standards for beef. AMS is moving through the normal procedures involved in such revisions, and has before the industry the proposal to de-emphasize maturity as a factor in grading beef from young cattle. If and when the changes become effective, the revised standards would encourage marketing of younger cattle at lighter weights.

WHILE the expansion of domestic markets for beef through the Nation's imaginative and vigorous free enterprise food industry is a key element in maintaining an economically healthy livestock industry, the development of new export outlets has been given high priority by USDA's Foreign Agricultural Service.

Beef Industry

A formal cooperative market development agreement with the American Meat Institute was completed in late May. This followed a survey of cattle and beef by a Presidential Mission, which found a definite potential for lower grades of U. S. beef generally, and some specialized possibilities for higher grades. European countries — faced with beef shortages — have relaxed some of the barriers previously inhibiting this trade.

Merchandising displays of U. S. beef in England, France, and Belgium, and major emphasis on beef at the USDA exhibit at the International Trade Fair in Hamburg, Germany, in August were among the promotional efforts abroad, even while beef buyers were arriving in this country from Germany, France, Italy, and the Netherlands. In the months following, exports of U. S. chilled and frozen beef advanced three-fold above the same period of 1963.

In addition to enlarged beef exports, the market development work resulted in renewal of a business dormant for more than 50 years — sales of cattle "on the hoof" to be fed and locally slaughtered in Europe. Italy proved to be a leading outlet for this live cattle business.

And even Italy's famed veal parmesan is not being overlooked as a means of relieving the pressure of large cattle numbers in the United States. Following trial export shipments of 2-week-old vealers by air in specially designed cartons, regular commercial shipments got underway in September. These shipments are expected to bring in \$2 million and may be the forerunner of a brisk business which will put American veal into Italian specialty dishes.



Above, Monte R. Flett and Vern Watson, of the National Live Stock and Meat Board, at a meat-cutting and merchandising demonstration for retailers. Below, loading the first shipment of U. S. feeder cattle to Europe in 50 years. The cattle are grass-fed animals of Standard grade selected to meet European taste for lean beef.





Manager of carrot order reviews crop statistics with member of his administrative committee.

Why A Marketing Order?

By W. J. Cremins

WHY a marketing order?

Take a look at the South Texas vegetable industries, where growers are operating Federal marketing orders for tomatoes, onions, lettuce and carrots.

Let's begin with World War II, when growers and handlers could hardly miss. The way to make money? Ship anything.

But the honeymoon ended. The large military orders diminished. Competition reappeared. Buyers began to disappear.

Sellers once again had to seek buyers . . . and there were *many* sellers.

There were more problems to come for South Texas. Cotton allotments and reduced cotton acreage. Vegetables took up much of that slack acreage. The Falcon Dam on the Rio Grande meant more water, many more acres, more vegetables. New varieties meant higher yields. Labor continued relatively cheap and plentiful.

Growers planted the seed catalog and hoped enough deals hit to keep finances in the black.

From an over supply of commodities and sellers evolved an assortment of questionable marketing practices — for instance, shippers offering overweight containers as an inducement to the buyer.

The primary interest was making the sale. All too often, today's sales prices were adjusted back to the grower tomorrow. And the seller's argument: "If I don't give him a quarter, I'll lose a good customer — and we can't afford to lose a good customer."

After a series of distressing years, growers began to react. Lower Rio Grande Valley tomato growers, among the hardest hit, sought and obtained a Federal marketing order in 1959. Growers requested it. Growers approved it . . . or at least, 9 out of 10 did.

The Tomato Administrative Committee was the growers' committee set

up to operate the program. It went to work and established sizing requirements to obtain uniform packs — an important point in a mature-green tomato deal, since buyers are mostly repackers. The committee introduced minimum grades to prevent the shipping of poorer fruit that would be substituted for sound fruit in the market.

The result? Volume buyers found they could depend on getting delivery of big orders and repeat orders and getting virtually the same qualities each time.

Culls in years past were sold to peddlers for whatever they would bring . . . generally only \$15 or \$20 a truck load, often less. With cull sales prohibited, markets like Houston, San Antonio, Dallas-Ft. Worth formerly plugged with culls were opened up for better tomatoes which gave the growers a real return. Handlers were able to capture surrounding areas with 20 million or so people as a real market

— a market that had previously been relegated to poorer quality tomatoes or tomatoes from competing areas.

Receivers throughout the country and Canada no longer looked at Texas as a last resort . . . a place to go for tomatoes when Florida, California, even Mexico, could not supply the merchandise. Texas began to command respect in the market-place.

When growers, and previously skeptical handlers saw that the tomato program worked to their mutual advantage, they set up Federal marketing orders on carrots, onions and lettuce. The lettuce program is confined to the lower Rio Grande Valley, while the more ambitious carrot and onion orders take in all of South Texas where these commodities are produced.

The carrot industry had drifted into a lot of "wild" acreage since it is a relatively inexpensive crop to produce. The acreage was often earmarked for a cotton crop during the following spring, and many growers sacrificed the carrots in February or March just to get the land cleared. Packs were often "field run, topped and washed." Oversupply was a frequent problem, and as one sales agent remarked, "Selling 75 cars is a lot more than 3 times the work of selling 25 cars."

The low prices discouraged handlers from putting up a more acceptable pack, and overweight packages were used to attract and hold buyers.

The Carrott Committee put weight limits on containers to guard against handlers giving away unreasonable amounts of carrots at the grower's expense. Packs were limited to the better grades . . . and size ranges were established. Off-grade or off-size carrots went to canners or for livestock feed.

The Texas image of poor and unreliable packs began to change. Texas is now getting a bigger share of the carrot market.

The Carrott Committee has been successful for two main reasons. First, South Texas originates most of the winter carrot supply . . . what they do has a real impact on the market. Second, aggressive grower leadership has kept grower interests paramount; they are determined to move carrots at a profit even if it means diverting large quantities of them to nonfresh uses.

Handlers have had to carefully grade and size carrots, slowing down the output . . . and by adjusting grade and size requirements, the committee has made more carrots available in periods of short supply and less available when there is an oversupply.

The Onion Committee inherited about every problem known to the industry. The trade had lost confidence in the deal. No one had nerve enough to buy FOB, at least at a confirmed price. Packs lacked uniform grading and sizing. And again, there were the overweight containers.

Some handlers were interested primarily in packing charges — and they stressed volume rather than return to the grower. Early shipments, seeking the higher price at the deal's beginning, were too often poor-quality that left consumers, retailers and wholesalers reluctant to buy again.

The committee's first move was to standardize containers and packs, and establish minimum grades — again improving the industry's quality image.

The lettuce program was put into effect about the same time as the onion program. Its main success has been eliminating poor quality lettuce. Packing from abandoned fields, bought for a few dollars, itinerant merchants could sell cheap — and plug Texas markets with inferior lettuce. Now the quality regulations keep the poorer lettuce off the market, and the industry moves good lettuce to major Texas markets

and to midwestern, southern and even eastern markets.

All of this is not to say that the South Texas vegetable growers always make money since they got their marketing orders. It is not to say that the marketing order programs have eliminated all their problems. But the vegetable men have used the marketing programs to guarantee their customers a sound product, packed to meet their needs. And they've brought some order into what was marketing chaos.

Less heralded, but perhaps the most important asset of any marketing order is the assembly of growers, shippers, and allied industry men. Gone is the waste, frustration and pity of isolated, opposing groups. Men with many common problems and objectives — and sometimes with conflicting problems and objectives, get together. They discuss problems and try to reach objectives to their mutual advantage. The industry profits from working together and becoming better informed.

(The author is a marketing specialist in the Fruit and Vegetable Division, AMS. He is stationed in the Division's McAllen, Texas field office.)

A Federal-State inspector examines a box of lettuce at the packing plant.



Shorter Truck-Waiting Lines at Country Grain Elevators

By Heber D. Bouland

On a hot July day in 1963, one country elevator operator served cold lemonade to his customers while they waited in line to unload their trucks. This is one way to try to keep customers happy if they have to wait too long to unload grain, but matching your receiving capacity to the expected number of truck arrivals is a better way. For if your receiving facilities have too little capacity you may have truck-waiting lines over a mile long.

A recent study by marketing researchers in the Agricultural Research Service of the U.S. Department of Agriculture shows how to determine the size of receiving system to fit your needs. Researchers found that in estimating the time the truck would have to wait one cannot work on simple averages.

For example, if you found that it took an average of 3 minutes to unload a truck, then you might assume that in an hour you could easily unload 20 trucks; and in a 16-hour working day, 320 trucks without waiting lines. But in actual practice, if this system received 320 trucks, many would have to wait well over 2 hours.

Long waiting intervals are due mainly to irregular arrivals of trucks. In a 16-hour day more than 10 percent of the trucks will arrive during one late-afternoon hour. And arrival rates are often far from uniform within the hour. In some cases during a single 5-minute period of the hour, as many as 20 percent — instead of a uniform 8 percent — may arrive at the elevator.

Researchers studied three receiving systems — a low capacity system with the dump pit and truck scale together

and a two-man receiving crew; a medium capacity system with the pit and scale separated and a two-man crew at both scale and pit; and a high capacity system with four men at the scale and two men at each of three dump pits.

The relationship between truck arrival rates and average waiting times that was found from USDA research is shown in the adjacent chart. In this chart arrival rates are expressed as percent of daily potential service capacity — the number of trucks the elevator could receive in a 16-hour working day if they all arrived at a steady pace.

Our elevator with a theoretical potential service capacity of 320 trucks per day could, in practice, handle only about 60 percent of this number, or 192 trucks a day, to keep the average waiting time of the truck to about 10 minutes. Researchers also found that the maximum actual waiting time of trucks was about double the average waiting time of trucks given in the chart.

The chart and estimates of the cost of truck waiting show that the low-capacity system is economical only if fewer than 600 trucks are received per harvest season. The medium-sized receiving system is most economical in the range of from 600 up to about 1,500 trucks per harvest season. And the high-capacity system is economical only if more than 1,500 trucks are received per harvest season.

In this study, researchers used what is called an operations research approach instead of a conventional engineering approach. The operations research approach uses some of the techniques of engineering, economics, and statistics. In this approach the entire receiving and grain harvesting

system was studied, including loading of trucks from combines in the field, truck trips to the elevator, weighing and unloading operations, and return trips to the field for reloading.

Research results were obtained by using electronic computers to simulate the movement of about 9,000 trucks. Researchers estimate that it would have probably taken them 10 to 15 years of field studies to obtain the same data if they used traditional research techniques.

In this study, an approximate simplified method was also worked out for elevator operators to determine the best capacity of truck receiving facilities to build for their own situations. Approaches used in this study might also be used for other types of facilities that handle many other kinds of agricultural products.

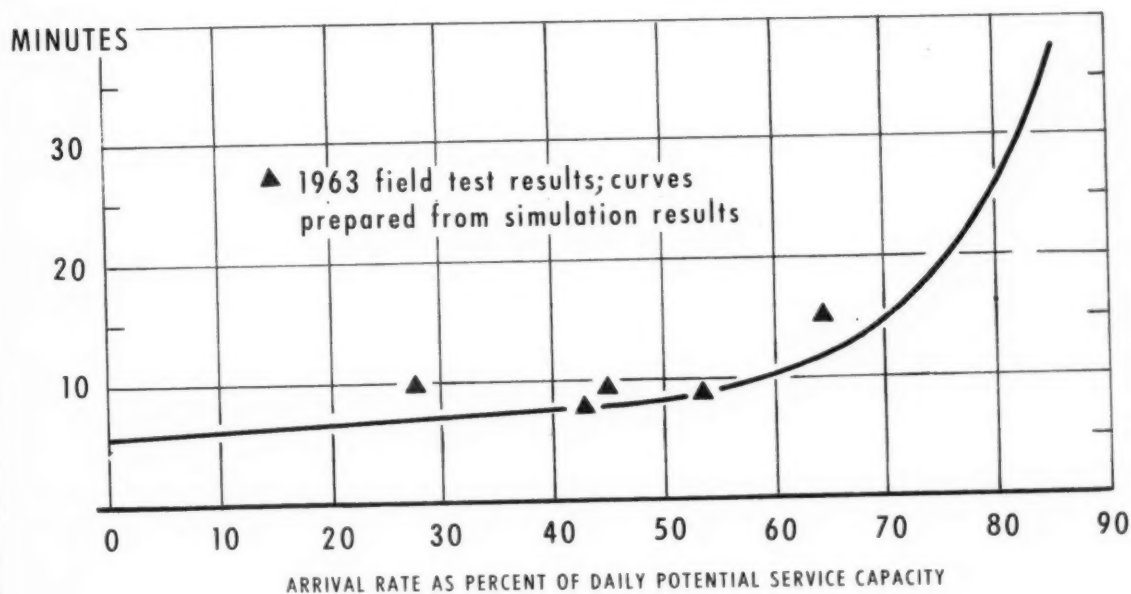
Altogether, about 170 million tons of agricultural products move from the farm to the consumer each year. Probably more than 30 million truck, boxcar, and airplane loads are unloaded or received at least once, and probably two or three times on their way from the farm to the consumer. Improvements in efficiency in many of these handling operations could be achieved through the kind of study the researchers made at grain elevators.

Single free copies of "Selecting the Best Capacity of Truck Receiving Facilities for Country Grain Elevators," Marketing Research Report No. 671, are available from Office of Information, USDA, Washington, D. C. 20250.

(The author is a member of the Transportation and Facilities Research Division, Agricultural Research Service, USDA.)



AVERAGE TRUCK WAITING TIME IN TERMS OF SERVICE CAPACITY



U. S. DEPARTMENT OF AGRICULTURE

NEG. AMS 684-64 (3) AGRICULTURAL MARKETING SERVICE

Efficiency at Work

By James A. Lonsbury

PRODUCTION up 55 percent— overtime down 65 percent!

What business or government agency wouldn't like to show achievements like these?

Well, it's been done — to the benefit of both the Agricultural Marketing Service of the U. S. Department of Agriculture and Sioux City, Iowa, meat packers — by the Sioux City meat grading office of AMS's Livestock Division.

Careful study of meat grading operations in their area convinced Supervisor Howard Bowling and Assistant Supervisor Tom Keene that these operations could be improved and carried out more efficiently.

Their aims were to sharply reduce grader overtime and "standby" time and decrease the cost of the service through greater productivity — without interruptions to grading services.

Federal meat graders from the Sioux City Main Station, one of 16 such stations located in various areas of the country, apply official U. S. grade standards to meat and meat products for members of industry in the Sioux City area. The grading service, conducted only upon request, is performed on a fee basis to cover its cost. Thus, it is self-supporting.

As the first step, Bowling notified packing plant officials and the graders under his supervision that both overtime and non-revenue producing "standby" time should be sharply reduced and, if possible, eliminated.

At first, some plant managers were not too enthusiastic about Bowling's action. In some quarters, little importance had been attached to how efficiently a grader's time was utilized.



The official USDA grade mark for beef is applied to each carcass with this roller stamping device. The roller leaves a ribbon-like imprint of the grade name over and over again, so that at least a part of the grade name appears on most retail cuts. The USDA grade mark can only be applied by a Federal meat grader of the AMS Livestock Division, or under his official supervision.

The cost of grading service, \$7.20 per hour, is small in relation to overall plant operating expenses. (The cost per 100 pounds of meat graded in the Sioux City area averaged less than 2½ cents in June of this year.) Consequently, some plant managers were not concerned much about grader "standby" time or overtime, but rather were interested in having a grader available when wanted.

Plants outside the Sioux City area were even less enthusiastic about Bowling's efficiency plans. To reduce overtime, graders were rotated, relieving those who had completed 40 hours of work in a given week. This naturally boosted grading costs for these distant packers since they were billed for transportation and per diem for relief graders. The increased costs, however, were only temporary. As these plants adapted to the new grading operations, costs returned to normal or below.

Bowling and Keene also found that a relatively close correlation existed between grader duty hours and the hours worked by plant personnel charged with the selection, assembly, and shipment of meats. When it was necessary for a grader to work overtime, plant personnel invariably worked as many hours or more. Plant managers soon found that more efficient use of a grader's time resulted in less overtime among their own employees. Packers now watch the grader's duty time as closely as does the meat grading office.

Bowling and Keene also discussed with packers some modifications in plant operational procedures that would enable them to make more efficient use of a grader's time, making suggestions in this respect.

At one plant, where carcasses were formerly graded in a stationary position on an overhead rail, an automated system was developed. Carcasses are now graded as they move along on a chain. This plant is now a likely candidate for the lowest grading costs in industry. Another plant cut its grading costs 40 percent.

Many Sioux City packers have complimented the local meat grading office for helping them to recognize and eliminate operating inefficiencies.

The vice president of one plant said, "We've made changes and are operating in a way we didn't think possible."

But the proof of the pudding is in the eating, and the records of the Sioux City meat grading station show how successful it has been in reaching its goal — providing more efficient and less costly service to the industry.

During the fiscal year ended June 30, 1964, grader overtime dropped about 65 percent from the preceding year. "Standby" time was down more than 40 percent for the year as a result of consistent monthly decreases.

At the same time, the tonnage of meat graded by the Sioux City station has increased and continued to rise. In June of this year, the amount of beef graded was up more than 52 percent from a year earlier, and nearly 80 percent above June 1962. In terms of dollars and cents, packers in the Sioux City area paid \$.00029 cents per pound, or \$290.00 per million pounds, for grading in June 1963, and \$.00024 cents per pound, or \$240.00 per million pounds in June of 1964, which is 17 percent below the previous June's cost.

With a new plant under construction

and another planned for the Sioux City area, Bowling looks for further increases in grading. Whenever these plants go into operation and want meat grading service, Bowling and AMS's Federal meat grading service look forward to providing it — even more efficiently and at the lowest possible cost.

(The author is a member of the staff of the Midwest Area office, Marketing Information Division, Agricultural Marketing Service, U. S. Department of Agriculture, in Chicago.)

Editor's note: The cost of Federal meat grading service was increased to \$7.40 per hour, effective August 31, as a result of the Federal employees' pay raise enacted by Congress, Public Law 88-426.)

Record Inspection of Export Wheat

THE quantity of wheat inspected during the 1964 fiscal year for shipment to markets abroad set an all-time record of 751 million bushels, with 37 percent grading "No. 1" and 62 percent "No. 2," according to the Agricultural Marketing Service of the U. S. Department of Agriculture.

More than 58 percent of the wheat inspected during the fiscal year was exported from Gulf ports. Pacific ports accounted for 23 percent, Atlantic ports 12 percent, and Great Lakes ports 7 percent.

Total bushels of each class of wheat inspected for export were: hard red winter, 473 million; white, 128 million; soft red winter, 73 million; hard red

spring, 46 million; durum, 28 million; and mixed wheat, 3 million.

During fiscal 1963, about 36 percent of the export wheat inspected was of grade No. 1 — 1 percent less than fiscal 1964 — and 64 percent of No. 2, with less than 1 percent grading No. 3 or lower.

Wheat for export, like nearly all wheat shipped domestically, is inspected and graded according to U. S. standards by licensed inspectors employed by State departments of agriculture or similar State agencies, or by private inspection agencies. The Agricultural Marketing Service licenses and supervises the inspectors.

October Is Co-op Month

In October, named Co-op Month by several States, the U. S. Department of Agriculture will feature a patio exhibit on "Cooperatives Help USDA Programs Build America." It will show how the various agencies in USDA help farmer cooperatives.

From October 5 through October 23, this exhibit will focus on five reasons why USDA works with farmer cooperatives. Co-ops help raise farm income, build up the economy of rural areas, provide quality products to con-

sumers, develop international understanding, and strengthen democracy.

Special events will include the presence of top Government officials and agricultural leaders, a film festival, and information and publication booths, with a special co-op fact leaflet available. Throughout the 3 weeks, panel discussions and similar activities will take place. Invitations have gone out to young people, foreign visitors, and other groups to come, see, be entertained, and learn. The general public is welcome, too.

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OFFICIAL BUSINESS

Beef Time with the Midshipmen

By Jack Mueller

At 6:35 p.m. on a typical day at the U. S. Naval Academy, Annapolis Maryland:

The doors of the world's largest mess hall open. Starched, glittering platoons of young Midshipmen dash up the aisles to stand resolutely at attention behind assigned table positions. There is a single, ear-shattering chorus of "Anchors A-Weigh," which rattles the rafters. The Midshipmen stand at prayer for a moment. Then the order "seats!" is given, and 4,000 chairs scrape as one against the floor. The "Middies" are ready to eat.

It takes precisely three minutes for the stewards to roll in serving carts and distribute trays of beef and vegetables to the table heads. In 25 minutes, the Midshipmen will stow away 2,100 pounds of roast beef, a ton and a half of vegetables, and 4,800 quarts of milk. First-year men, "plebes," sit stiffly at attention on the forward three inches of their chairs. This is part of their indoctrination into Academy life.

From their first year until graduation, Midshipmen are schooled, drilled, and fed in an atmosphere of tradition, firm regimentation, and strict discipline. Every move they make is calculated. Strenuous physical activity is mandatory — each Midshipman must participate in one athletic event, varsity or intramural, during each sports season. Hearty beef meals are necessary in maintaining this rugged schedule.

"Anyone who's fed a single teenage boy can appreciate our problem here," says Navy Commander J. P. Tice, Midshipmen's Commissary Officer. "We have 4,000 physically active young men with healthy appetites."

Commander Tice depends on plenty of beef meals for his menus. Steaks



At the U. S. Naval Academy in Annapolis, Maryland, hearty beef meals are favorites with these physically active young men with strong, healthy appetites.

are served twice a week, and pot roasts once each week. Additionally, grilled hamburgers and beef balls in spaghetti frequently appear at Academy chow time. Steak, French fries, corn, peas, or spinach are the favorite foods at Annapolis. And Midshipmen swear by the ice cream there. It's specially made by the Midshipmen's Mess in a very modern continuous type ice cream plant with products supplied by the USNA dairy, which also manages to keep up with the Midshipmen's thirst for milk — about 1/3 gallon per man per day.

Extremely efficient methods of meal preparation have been developed which reflect the timing, precision, and teamwork characterizing the Academy. Commander Tice has 200 civilian employees

who buy, receive, and cook the food. In fact, they do everything but serve it. That is accomplished by 85 enlisted Navy stewards.

"We have a continuous mass production approach to meal preparation," states the Commander. "We try to cook meals as close to serving time as possible."

It takes 12 minutes to properly prepare a steak in the infra-red, conveyor-belted broiler in the galley. Steaks roll through the broiler in a constant stream, so that in 45 minutes, 4,000 steaks are ready and waiting for the Midshipmen to attend chow.

A roast or steak serving averages a half a pound per man. Multiply this by the number of Midshipmen, and almost a ton of beef is packed away each time the Brigade sits down to eat. Seconds are not unheard of (particularly during football season), and a total of 2,100 pounds of beef will disappear at a good steak dinner. When hamburgers are featured, 1600-1800 pounds of meat will be accounted for. And even meatball and spaghetti meals will provide the Middies with 1200 pounds of USDA inspected beef. More than half a million pounds of fresh beef are consumed each year at Annapolis — 544,000 pounds, to be exact!

The "plebe" who must endure "bracing up" while eating may be uncomfortable, but he's getting some of the best meals in the Armed Services. As he gets "squared away" at the U. S. Naval Academy for his officer's career, he can rest assured the quality of his meals will be maintained at the same high standards demanded of Academy training. The best food is demanded, and beef is tops on the list!

(Mr. Mueller is a public information specialist in the Marketing Information Division, Agricultural Marketing Service.)

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